UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,224	07/03/2003	Lloyd Watts	PA3016US	7033

22830 7590 12/13/2006

CARR & FERRELL LLP
2200 GENG ROAD
PALO ALTO, CA 94303

EXAMINER	
SELLERS, DANIEL R	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 12/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,224	WATTS, LLOYD	
	Examiner	Art Unit	
	Daniel R. Sellers	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. **Claims 6, 7, 20, and 21** are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 6, 7, 20, and 21 of copending Application No. 10/074,991. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1, 3-5, 8-12, 14-16 and 22-25** are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Baumgarte (USPN 6,915,264).

5. Regarding **claim 1**, Baumgarte teaches a method of analyzing an input signal into a plurality of frequency components (Col. 2, lines 46-57 and Fig. 1-3) comprising:

processing the signal with a first set of low pass filters (Fig. 2, unit 21-1 with filters 23-1 to 23-q) *to derive a first set of frequency components wherein the first set of low pass filters are arranged serially in a chain having a first low pass filter* (filter 23-1) *and a last low pass filter* (filter 23-q), *the output of each low pass filter being fed to the next low pass filter in the chain until the last low pass filter* (Col. 4, line 61 - Col. 5, line 25 and Fig. 1-2);

downsampling the output of the last low pass filter to produce a downsampled signal (Col. 5, lines 14-25 and Fig. 2, units 22-1 and 22-2);

processing the downsampled signal with a second set of low pass filters to derive a second set of frequency components (Fig. 2, unit 21-2).

6. Regarding **claim 3**, the further limitation of claim 1, Baumgarte teaches a filter bank with downsampling means between cascaded low pass filters. Baumgarte also teaches that similar filters in different stages have a different Q, or quality factor (Col. 7, lines 13-65 and Eq. 1-2).

7. Regarding **claim 4**, the further limitation of claim 1, see the preceding argument with respect to claim 3. Baumgarte teaches a second set of low pass filters that have a Q that is less sharp than the first set of low pass filters (Col. 7, lines 13-19).

8. Regarding **claim 5**, the further limitation of claim 1, Baumgarte teaches a second set of low pass filters having a Q that differs from the Q of the first set of low pass filters substantially according to the human critical bandwidth (Col. 7, lines 13- 36).

9. Regarding **claim 8**, Baumgarte teaches a first filter (Fig. 2, filter 23-1) to separate part of the signal into a first output and a second filter (filter 23-2), wherein the first channel inherently emphasizes a higher frequency than the first (see figure 2). The

second set stage or set of filters has a different Q than the first (Col. 7, lines 13-65 and Eq. 1-2).

10. Regarding **claim 9**, the further limitation of claim 8, see the preceding argument with respect to claim 4. Baumgarte teaches this feature.

11. Regarding **claim 10**, the further limitation of claim 8, see the preceding argument with respect to claim 5. Baumgarte teaches this feature.

12. Regarding **claim 11**, Baumgarte further discloses the filter cascades are low pass filters (Col. 4, lines 44-60).

13. Regarding **claim 12**, see the preceding argument with respect to claim 1. Baumgarte discloses a cochlear filter bank structure, which comprises of a series of filter bank sections with downsamplers in between (Col. 5, lines 14-25). Figure 2 comprises of a stage 1 consisting of a series of filters (23-1...23-q) wherein the output of the last filter 23-q is then processed by downsampler 22-1. The downsampled signal is processed by stage 2 by a second set of filters. Baumgarte further discloses the filter cascades are of low pass filters (Col. 4, lines 44-60).

14. Regarding **claim 14**, the further limitation of claim 12, see the preceding argument with respect to claim 4. Baumgarte teaches these features.

15. Regarding **claim 15**, the further limitation of claim 12, see the preceding argument with respect to claim 4. Baumgarte teaches these features.

16. Regarding **claim 16**, the further limitation of claim 12, see the preceding argument with respect to claim 5. Baumgarte teaches these features.

17. Regarding **claim 22**, Baumgarte discloses a first filter (Fig. 2, filter 23-1) to separate part of the signal into a first output and a second filter (filter 23-2), wherein the first channel inherently emphasizes a higher frequency than the first (see figure 2). The second set stage or set of filters has a different Q than the first (Col. 7, lines 13-65 and Eq. 1-2).

18. Regarding **claim 23**, the further limitation of claim 22, see the preceding argument with respect to claim 4. Baumgarte teaches these features.

19. Regarding **claim 24**, the further limitation of claim 22, see the preceding argument with respect to claim 5. Baumgarte teaches these features.

20. Regarding **claim 25**, the further limitation of claim 22, Baumgarte further discloses the filter cascades are of low pass filters (Col. 4, lines 44-60).

21. **Claims 6, 7, 20, and 21** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Carlson et al., USPN 4,674,125.

Carlson teaches a method of separating audio and video signals into their respective frequency components, into different channels containing different bands of frequencies the original input signal (Col. 6, lines 16-29).

Specifically regarding **claim 6**, Carlson teaches:

processing the signal with a first low pass filter to produce a first low pass filtered signal (Fig. 1, unit 100-1, Fig. 1b, unit 100_{b-k}, 102, signals G_{k-1}, and G_k);

subtracting the first low pass filtered signal from the input signal to derive a first frequency component (Fig. 1b, 110, G_k, G_{k-1}, and L_{k-1});

processing the signal with a second low pass filter to produce a second low pass filtered signal (Fig. 1, unit 100-2, Fig. 1b, unit 100_{b-k}, and signal G_k); and

subtracting the second low pass filtered signal from the first low pass filtered signal to derive a second frequency component (Fig. 1b, unit 110, 100_{b-k}, 102, signals G_{k-1}, G_k, L_{k-1}, and Fig. 1, signal L_1).

22. Specifically regarding **claim 7**, Carlson teaches the features of claim 6, and the noted difference, wherein:

... processing the low pass filtered signal with a second low pass filter to produce a second low pass filtered signal (Fig. 1, unit 100-2, signal G_1, Fig. 1b, unit 100_{b-k}, and signal G_k); and ....

The teachings of Carlson teach that the second low pass filter is connected to the output of the first low pass filter, and therefore the separation of an input signal into two different frequency components is accomplished.

23. Specifically regarding **claim 20**, see the preceding argument with respect to claim 6. Carlson teaches a system for separating the input signals into a plurality of frequency components, wherein the first and second low pass filters are comprised of digital convolution filters and the first and second processors are digital subtractors (Fig. 1, 1b, Col. 6, lines 38-40, and Col. 13, line 54 - Col. 14, line 35).

24. Specifically regarding **claim 21**, see the preceding argument with respect to claim 7 and claim 20. Carlson teaches a system with these features.

Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

26. **Claims 2 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Baumgarte as applied to claim 1 above, and further in view of Carlson.

27. Regarding **claim 2**, the further limitation of claim 1, Baumgarte teaches the method of claim 1. However, Baumgarte does not teach a low pass filter, which is derived by subtracting the output of a low pass filter from the input of the low pass filter.

28. Carlson teaches a low pass filter with subtraction means as claimed (Col. 12, lines 5-47, Col. 13, line 54 - Col. 14, line 30, Col. 15, line 62 - Col. 16, line 35, and Fig. 1-3). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Baumgarte and Carlson for the purpose of reducing the number of filters needed to implement the system.

29. Regarding **claim 13**, the further limitation of claim 12, see the preceding argument with respect to claim 2. The combination teaches these features.

30. **Claims 17-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Baumgarte as applied to claim 12 above, and further in view of well-known prior art.

31. Regarding **claim 17**, the further limitation of claim 12, Baumgarte teaches a system for use in the field of perceptual audio coding (Col. 1, lines 8-30). The Office

takes *Official Notice*, wherein it is well known that voice recognition systems employ perceptual audio coding. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Baumgarte and well-known prior art for the purpose of using only the perceived qualities of the audio signal for voice recognition.

32. Regarding **claim 18**, the further limitation of claim 12, see the preceding argument with respect to claim 17. It would have been obvious for the purpose of separating an audio stream using only the perceived qualities of the audio signal.

33. Regarding **claim 19**, the further limitation of claim 12, see the preceding argument with respect to claim 17. It would have been obvious for the purpose of localizing sound using only the perceived qualities of the audio signal.

Conclusion

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Engel, USPN 3,976,863, teaches a filter bank for decomposing signals into different frequency channels (Col. 5, lines 3-28);

Nakatani et al., USPN 5,150,413, teaches a cascaded group of filters an a subtraction process to form bandpass filters (Fig. 5); and

Lovett, USPN 6,434,417 B1 teaches creating bandpass filters using low pass filters and subtraction (Col. 7, lines 4-10).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel R. Sellers whose telephone number is 571-272-7528. The examiner can normally be reached on Monday to Friday, 9am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DRS

SINH TRAN
SUPERVISORY PATENT EXAMINER